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DISCOVERIES AND CURRENT EVENTS *

French North Africa: Desert and Moroccan Locusts (1).

ALGERIA, MOROCCO AND TUNIS.

Schistocerca gregaria.

On 2 July, 1934, a small pink swarm, coming from the S. W. (probably from Morocco) settled near Aïn-Sefra and flew away again towards the N. E.

No desert locusts have been reported during the months of August and September in Algeria; or in Morocco and Tunis during the months of July, August and September, 1934.

ALGERIA.

Dociostaurus maroccanus.

During the months of July and August, 1934 isolated adults have been reported in the communes of Mekerra, Le Télagh, Saïda, Frenda, department of Oran, Boghari, department of Algiers, Barika, Bélezma, Aïn El Ksar, Aïn M' Lila, department of Oran.

Small, but fairly intensive laying has been reported near Zahrez Chergui, at the douar Sahary Ouled Brahim, C. M. of Aïn Boucif.

Australia: *Chondrilla juncea* in New South Wales (2).

In the Riverina wheat area *Chondrilla juncea* is becoming a serious weed.

Eritrea: Locusts (3).

During the month of September, 1934, no eggs, no hatching of hoppers, nor swarms of locusts have been reported in the whole of the Colony.

On the 18th September, 1934, in the Iara district (Adi Abò), on the other side of the Ethiopian frontier, a very great number of hoppers have appeared.

* Under this and the third heading the countries are arranged in French alphabetical order.

(1) Communication from the Government General of Algeria, Direction of Economic Services to the International Institute of Agriculture.

(2) Communication from Mr. B. T. DICKSON, Chief of the Division of Plant Industry, Council for Scientific and Industrial Research, Canberra City, F. C. T., Australia, to the International Institute of Agriculture.

(3) Communication from the official correspondent of the Institute, Dr. Rolando GUIDOTTI, Director of the Agricultural Bureau of Eritrea, transmitted to the Institute by the Government of the Colony.

United States of America: Winter Injury (1).

A survey of 879 apple orchards in Maine, containing about 430,000 trees of varying ages and 80,000 young trees, revealed that 166,000 of the bearing trees and over 4,000 of the young trees were either killed by the severe winter of 1933-34 or so severely injured as not to be worth maintaining. Over one-fourth of the surveyed orchards will not be replanted.

United States of America: First Reports (1).

Anna E. Jenkins has recently reported the identification of *Cytosporium minimum* Laubert on rose stem cankers from two localities, Hood River, Oregon, and Harrisburgh, Pennsylvania. This is apparently the first record of the fungus in the United States.

C. B. Sherbakoff has announced the finding of what he regards as the first authenticated instance of wilt of tobacco (*Nicotiana tabacum*) caused by *Verticillium albo-atrum*. He cites one previous report of *V. albo-atrum* on tobacco by Averna-Saccà, but gives reasons for questioning its validity. Sherbakoff found the diseased tobacco near Knoxville, Tennessee. He states that cultures of the fungus are available to those who are especially interested in it.

Frank P. McWhorter and Henry J. Reynolds have reported an outbreak in King County, Washington, of a serious Botrytis disease of narcissus not previously known to occur in the United States. The new Botrytis appears identical with *Botrytis polyplastis* Dowson. McWhorter and Reynolds consider it by far the most serious foliage disease of narcissus they have yet encountered. It does not cause a bulb rot.

United States of America: Dutch Elm Disease (1).

Scouting for Dutch elm disease (*Graphium ulmi*) in the infected areas centering about New York City has resulted as of September 10, in the discovery of over 7,000 diseased trees. Of this number 2,054 were in New York State; 4,929 in New Jersey; and 56 in Connecticut. The diseased trees in New York and Connecticut have been destroyed, but the eradication programme in New Jersey is hampered by lack of available funds.

A single additional infected tree was found early in September at Cleveland, Ohio, where several diseased trees were discovered in 1931 and 1932. The disease does not appear to have spread in Ohio.

(1) Communication from Mr. H. A. Edson, Principal Pathologist in Charge, Plant Disease Survey, Bureau of Plant Industry, United States Department of Agriculture, Washington, to the International Institute of Agriculture.

Mozambique: Locust Movements (*Nomadacris septemfasciata* and *Locusta migratoria migratorioides*) (1).

Monthly Report (August, 1934).

Cape Delgado District. — Only a few swarms, moving N. and W., have been reported near the river Rovuma. In this district the locusts have been infested by *Empusa grylli*.

Mozambique District. — No movements of locusts have been reported in this district except for a small swarm near the river Lurio.

Tete District. — At the begin of the month a slight movement of locusts was reported in this district, though at the end of the month it was invaded by large swarms coming from Northern Rhodesia.

Inhambane District. — The passage of a large swarm has been reported, flying towards the N.

Quelimane District. — Movements of locusts continue in various directions.

Lourenço Marques District. — No information has been received on the movements of locusts in the southern part of this district. On the borders of Incomati a huge swarm has been seen flying along the river. In the north of this district the passage of a large swarm has been reported at the begining of the month, also another swarm of no less importance in the middle of the month both of which flew towards the N.

Mozambique Company. — Large swarms, flying S., have been reported.

Conclusion. — Movements of locusts have diminished greatly during this month. The swarms previously reported have united, forming large swarms, and flown N. or S. In the Tete district an invasion of locusts from Northern Rhodesia has been reported.

The existance of *E. grylli* has been verified in Nyassa, Cape Delegado and Mozambique.

It is not possible to foresee the future, but, inf there is no new invasion from neighbouring countries, it will be possible to reduce the intensity and extension of the pest during the forthcoming campaign.

(1) Communication from Mr. Julio Gardé Alfaro Cardoso, Chief of the Entomological Section, Lourenço Marques, trasmitted to the Institute by the Direction of Agricultural Services of the Colony.

Southern Rhodesia: Locust Invasion, 1932-1934 (1).

Monthly Report No. 21. August, 1934.

The only species of locust recorded in the Colony during August has been the Red Locust (*Nomadacris septemfasciata*, Serv.).

As anticipated, swarms have become much more active with the advent of warmer weather and the Colony has also sustained invasion of very large swarms via Northern Rhodesia. These have been variously described as 25 and 30 miles long whilst one was stated to have taken two days to pass over one farm. This series of large swarms has held a S. E. direction through the Lomagundi district.

Swarms have been reported mainly from the north-eastern and eastern districts of the Colony, although a few have been recorded in Wankie and other western districts. No locusts have been reported in the southern districts or the midlands.

As last year, the humid eastern border seems to have been specially attractive and the swarms have remained there with only minor movements.

Enemies and Disease:

All specimens examined have been healthy. *Empusa* has not been in evidence during the month.

Damage:

Some damage to irrigated crops has occurred, but such damage has not been general. Early veld has been eaten off, especially on the Eastern border. Considerable damage to Eucalyptus and other plantations has occurred, chiefly due to the weight of the locusts breaking branches and in some cases the actual trunks of big trees have snapped.

Outlook:

Whilst the outlook for the coming hopper season would appear to depend rather upon the number of locusts to the north of the Colony then upon the present infestation of the Colony itself, the prevalence of many large swarms cannot be disregarded as indicating the possibility of a severe outbreak of hoppers during the coming wet season.

The outlook for the Union of South Africa in respect ot pre-breeding invasion from the north would appear to be serious.

(1) Communication from the official correspondent, Mr. Rupert W. Jack, F. E. S., Chief Entomologist, Department of Agriculture, Salisbury, Southern Rhodesia.

VARIOUS QUESTIONS

Resolutions of the Third International Locust Conference (1).

The Third International Locust Conference met at London from 11 to 18 September, 1934, at the invitation of the Government of the United Kingdom of Great Britain and Northern Ireland.

The following Governments were represented at the Conference:— Afghanistan, Union of South Africa, Belgium, Great Britain and Northern Ireland, Egypt, Spain, Abyssinia, France, India, Italy, Liberia, Portugal, Anglo-Egyptian Sudan.

The following resolutions were adopted on 18 September, 1934:—

I. — THE GENERAL PROBLEMS CONCERNING ALL THE SPECIES OF LOCUST FOUND IN AFRICA AND WESTERN ASIA.

(a) Outbreak areas and factors inducing tranformation of the solitary phase of migratory locusts into the swarming phase.

(1) The results of the investigations carried out in different countries leave no doubt that the swarms of locusts initiating an invasion (i. e., the primary swarms) appear in restricted areas, possessing definite characteristics, i. e., outbreak areas.

(2) The factors determining the transformation of phase *solitaria* into phase *gregaria* may differ for each species, or for each geographical race of the same species, according to the conditions in which the insects live.

(3) The main object of the international anti-locust research must be the delimitation of the outbreak areas.

(4) The exact delimitation of the outbreak centres and the possibility of foreseeing the appearance of the primary swarms, should be pursued by means of a thorough study of the factors determining the transformation of phase *solitaria* into phase *gregaria* in each species, or in each geographical race of the same species.

(5) Among the ecological conditions determing or facilitating the transformation of phases, the effect of the following on the bionomics and physiology of locusts must be specially studied:—

(*a*) humidity, temperature and other micro-climatic elements of the habitat;

(*b*) the food, particularly as a factor determining the habitat of individuals in different stages of their development;

(1) From the proceedings of the Conference prepared by the Government of the United Kingdom of Great Britain and Northern Ireland.

(*c*) associations with other species of animals (in particular parasites and predators) and plants;

(*d*) accumulation of individuals of the same species.

(6) Research in the outbreak areas must be supplemented by through experimental study on the influence of different factors on locusts, and this study should be carried out in central laboratories, working in a close contact with the investigators in the field.

(b) Life-cycle, particularly sexual maturation, in relation to climatic and others factors; and methods of study.

(1) The evidence so far obtained tends to show that the initial increase in numbers of solitary locusts which lead to the formation of incipient swarms may occur as a result of the acceleration of the life-cycle. This increase is due-according to the district and the species in question – in most cases so far studied to a rapid succession of generations during a short favourable season, but it may also be due to a gradual multiplication over a period of years. Studies of the life-cycle are, therefore, of vital importance for the solution of the locust problem.

(2) The ability of locusts to change their life-cycle under the direct influence of climatic factors has been repeatedly demonstrated. The importance of this fact for the correct forecasting of invasions and for the planning of anti-locust campaigns is evident. Studies of the life-cycle are, therefore, of immediate practical importance.

(3) Tropical conditions are usually favourable for the development of eggs and larvae without a diapause, but diapauses in the adult stage, consisting of the delayed sexual maturation, are of common occurrence. The duration, therefore, of the total life-cycle depends mainly on the absence or presence of a diapause in the adult stage. The presence or absence of this diapause should accordingly be regarded as the central problem of the life-cycle.

(4) The effects of the following factors on sexual maturation should be studied:—

(*a*) air temperature (constant and fluctuating);
(*b*) air humidity (constant and fluctuating);
(*c*) rainfall;
(*d*) temperature and humidity in combination;
(*e*) solar radiation;
(*f*) food;
(*g*) activity.

(5) The initial data bearing on the problem of diapauses should be collected in the field. For this purpose, the life-cycle of locusts under natural conditions should be studied at temporary field laboratories, fully equipped for observations on weather and microclimate.

(6) The data so collected should form a basis for exact experimental work in central laboratories, in which alone the full significance of the various factors can be investigated.

(c) Migration and the factors inducing it with regard to all phases, and methods of their study, with special reference to the type of meteorological maps likely to be of assistance.

(1) The aim of the study of migration and the factors inducing it is to build up a forecasting system in order to enable countries to prepare for locust invasions in advance. Good meteorological services in all areas would facilitate the evolution of such a system.

(2) In view of the importance of meteorological research in connection with present and future biological investigations on locusts, the Conference hopes that the co-operating Governments will establish, either permanently or temporarily, meteorological stations supplementary to the existing stations wherever the reports of field investigators show the necessity therefor.

(3) In view of the uncertainty as to which climatic factors are important in controlling locust migrations, the heads of the meteorological services of all countries invaded by locust swarms should be asked by their respective Governments to arrange that records of the movements of flying swarms should be made a routine observation at all first and second class meteorological stations. In order to establish correlations between such movements and local weather conditions, the data obtained should be analysed by meteorologists and entomologists working together. Instructions for recording should be supplied to all observers by the national locust organisations.

(4) Temperature, humidity, and wind are already known to affect the migrations of locusts. Records of these factors are of great value for the study of locusts, if presented in the form of meteorological maps. In the case of humidity, the data should be translated into terms of saturation deficiency or evaporating power, and not presented in terms of absolute or relative humidity, which do not affect insects directly. Since actual humidity records are taken only at a few stations, monthly rainfall maps would serve as an approximation over areas for which there are no humidity data.

(5) In order that meteorological maps may be of use in the study of locust migrations, they should contain the original meteorological data for each meteorological station.

(6) The following meteorological data represent the minimum amount of information which it is desirable to obtain from each meteorological station:—

(*a*) altitude of the station;
(*b*) maximum and minimum temperatures;
(*c*) dry bulb temperature;
(*d*) wet bulb temperature;
(*e*) rainfall;
(*f*) wind direction and wind force;
(*g*) cloud amount;
(*h*) atmospheric pressure.

(7) Monthly maps representing the territory studied should show by means of continuous lines of equal value the following data:—

(*a*) maximum and minimum temperature;
(*b*) relative humidity;
(*c*) rainfall;
(*d*) atmospheric pressure;
(*e*) wind direction.

(8) it is desirable that the information and maps prepared locally at monthly intervals should be transmitted without delay to the meteorological centres and should be published as soon as possible.

(9) In view of the importance of climatological factors for the study of the locust problem, the Conference considers it desirable that Governments should attach meteorologists to the locust research organisations.

(10) In view of the poverty of meteorological records over many of the areas infested by locusts and the ease with which such records may be misinterpreted, the analysis of swarm records in connection with climatic factors should only be undertaken by, or in collaboration with, persons having some personal experience of the areas in question.

(d) Ecology and habits of locusts in invasion areas, with special reference to dissociating factors.

(1) The study of locusts in invasion areas is of importance because:—

(*a*) these areas have not yet been fully defined and delimited, and in certain parts contain habitats which may prove suitable for the solitary phase (phase *solitaria*);

(*b*) the study of dissociating factors is likely to provide valuable indications of those ecological and climatic conditions which characterise outbreak centres.

(*c*) countries situated within invasion areas desire convincing evidence not only regarding the position of outbreak centres outside their borders, but also that it is impossible for swarms to arise within their own territories.

(2) It is desirable that the attention of Governments should be drawn to the importance of carrying out research in regard to locusts in their gregarious phase when the invasion is declining in intensity.

(3) An important aspect of locust investigations in the invasion areas s a study of the preferences exhibited by invading swarms in the selection of egg-laying sites, with special reference to the effect on such choice of present and past cultivation.

(e) Research on *Empusa grylli* (Fresenius) and other fungi and bacteria parasitic on locusts.

(1) Certain recent evidence suggests that the occurrence of epidemics of the locust fungus, *Empusa grylli* (Fresenius), is not as closely bound up with weather conditions as has been supposed of late years, but that sources of infection are sometimes wanting.

(2) The Conference therefore recommends that a combined field and laboratory study of the fungus should be made with a view, not only to discovering the role played by it in swarm cycles, but also to investigating the possibility of disseminating it artificially as a practical-control method. This study would best be made in one of the more developed countries of the southern half of Africa, such as Southern Rhodesia or the Union of South Africa.

(3) In order to facilitate research on *Empusa grylli* (Fresenius) and other fungus and bacterial parasites of locusts, the Conference hopes that workers in this field will deposit their cultures of fungi at the Centraalbureau voor Schimmelcultures, Baarn (Holland), and cultures of bacteria at the Lister Institute, London, and the Pasteur Institute, Paris.

(f) Methods of field surveys.

The Conference considers that in each country entomologists engaged in field work should themselves choose the methods which in their opinion are the most likely to secure the objects to which their research is directed.

The Conference, however, desires to draw the attention of entomologists to the following special points:—

(1) *Uniformity in methods of study.*

Uniformity in the methods of estimating locust populations and of recording the ecological characteristics of habitats is desirable as between different territories, and is essential within each territory.

(2) *Study of locust populations.*

(*a*) In making population studies of locusts it may in some circumstances be of value to include other species of insects or even other animals.

(*b*) The ideal method of estimating population is by the counting of numbers per unit area. Where in any particular territory the density of vegetation or other causes prevent this method from being sufficiently accurate, countings should be by numbers seen or caught per unit of time. Where the method of estimating is based on the number of specimens captured, captures should be made in the morning before the commencement of full activity.

(*c*) On account of the difficulties encountered in the use of the methods indicated above and the possible variations in their detailed application, the Conference recommends that in making reports entomologists should indicate with the greatest precision the methods which they have employed.

(3) *Analysis of plant communities.*

(*a*) Plant communities, in habitats where a number of species occur, should be analysed by one of the recognised methods employed in ecological botany.

(*b*) In habitats consisting only of one species of plant, the average height of the plants, the average number of plants per unit of area, and the

green weight (measured in grammes) of plants from one unit of area should form the standard of comparison.

(4) *Meteorological methods in the field.*

(*a*) Field laboratories should include a meteorological station in which, as far as possible, the following climatic data should be recorded:—

(i) precipitation;
(ii) wind direction;
(iii) wind intensity;
(iv) relative humidity observed at the standard hours of the meteorological offices of the territories concerned;
(v) maximum and minimum shade temperatures, and shade temperatures observed at the standard hours of the meteorological offices of the territories concerned.

(*b*) Microclimates are best studied by means of self-recording instruments. These should be of a type which can be readly moved from one station to another. The opinion of expert meteorologists should be obtained as to the types of instrument best suited for each purpose and for each territory.

(g) The need for fundamental research.

(1) Fundamental research in locust biology and locust physiology is urgently needed, as the solution of many practical problems depend on it.

(2) Since the present international locust investigations have a purely practical aim in view, it is desirable that the attention of research laboratories should be concentrated on those problems which have the greatest immediate value for the elucidation of the locust problem.

(3) It is desirable that financial assistance should be provided by locust organisation to enable research laboratories to undertake such studies.

(4) The following problems particularly require fundamental investigation:—

(*a*) the rate of activity of different phases as regulated by environmental factors (heat, humidity, light, food, density of population, etc.);
(*b*) the conditioning of behaviour by crowding and isolation;
(*c*) the biochemical nature of pigments and their rôle in metabolism;
(*d*) the reactions of hoppers and adults to environnemental stimuli;
(*e*) the resistance of different stages and phases to the physical factors of environnement;
(*f*) the importance of diapauses to the life-cycle;
(*g*) the diseases and parasites of locusts.

(5) In order to avoid the duplication of work, it is desirable that the information on the research work undertaken in various laboratories should be communicated to the Imperial Institute of Entomology, London (the international centre for anti-locust research), for distribution to other laboratories.

(h) Research on arsenical and other compounds in locust control.

It is generally accepted that the use of arsenical compunds in the form of poison baits, dust or spray is at present the most efficient, cheap and convenient method available for destroying locusts. There are certain disadvantages attaching to this method, and the Conference considers, however, that further effort be made to elucidate the following points:—

(*a*) the reasons for the variation in efficiency said to attach to the use of poison bait with certain species of locust in certain countries;

(*b*) the exact toxic action of arsenic on locusts, particularly when applied as a dry dust;

(*c*) the possibility of finding substitutes for arsenic compunds which are more efficient, cheaper and more convenient in use.

(i) Locust control by means of aircraft.

(1) The recent experiments in the use of aircraft against locusts suggest that:—

(*a*) locusts in flight make no effort to avoid a cloud of sodium arsenite dust, even when the cloud is dense, but instead pass steadily through it; and further, that the passage of an aircraft through a locust swarm and across its line of flight does not cause the swarm to change its course;

(*b*) the dust cloud should be discharged as close as possible to the front of the swarm; and that in the case of large swarms more than one discharge is necessary;

(*c*) the majority of the locusts which actually pass through a dust cloud ultimately drop out of the swarm and die;

(*d*) under normal atmospheric conditions, it is possible to discharge from an aircraft a cloud of sodium arsenite dust of sufficient density to remain toxic to locusts for a period of not less than three minutes;

(*e*) if a swarm in migration flight passes through a dust cloud, a large percentage of the locusts fall to the ground and die, and that it appears that this is due to paralysis of the wing brought about by inhalation of the dust;

(*f*) it is important that the sodium arsenite dust should be uniform in fineness, and that the swarms should be flying not less than 100 ft. above the ground, if risk of damage to livestock and crops through contact with the arsenite is to be avoided;

(*g*) valuable results may also be obtained by the use of aircraft for distributing sodium arsenite dust over swarms resting in trees or on the ground, where this can be done without risk to livestock and crops.

(2) The Conference considers that it is highly desirable that further experiments should be carried out with a view to developing the foregoing methods of controlling locusts by means of aircraft *.

* To be concluded in next issue.

LEGISLATIVE AND ADMINISTRATIVE MEASURES

Argentine Republic. — By Ministerial Resolution No. 227 of 7 April, 1934 a Commission has been formed for the study of the capacity of the plant of the genus *Delphinium*, known as ' espuela de caballero ', to destroy locusts. (*Boletín Oficial de la República Argentina*, Buenos Aires, 28 de abril de 1934, año XLII, núm. 11.966, pág. 1521).

*** By ' Acuerdo ' No. 43.566-772 of 19 June, 1934, approval is given to the making of a private contract by the Department of Agriculture for the acquisition of implements and material for the investigation of the parasites of the South American locust [*Schistocerca paranensis*]. (*Boletín Oficial de la República Argentina*, Buenos Aires, 6 de agosto de 1934, año XLII, núm. 12.045, pág. 204).

*** By ' Acuerdo de Ministros ' No. 45.412-881 of 17 July, 1934 approval is given to the allocation of 2.500 ' pesos ' for the purchase of material for alterations to be made to a chamber of fumigation for the ' Dirección de Defensa Agrícola y Sanidad Vegetal ' of the Ministry of Agriculture (*Ibid.*, 15 de septiembre de 1934, año XLII, núm. 12.078, pág. 726).

*** The ' Acuerdo ' No. 45.413-882, of the same date approves the purchase by private tender of instruments and material for repairing the apparatus used in the control of plant pests by the above mentioned ' Dirección '. (*Ibid.*, pág. 227)

*** In view of the necessity for adopting measures to prevent the spreading of the oriental peach moth (' gusano del duraznero ', *Laspeyresia molesta*) in the fruit-growing districts of the country, the Presidential Decree No. 45.741-928, of 21 July, 1934, prohibits the transport of plants in general destined for the provinces of Mendoza, San Juan, Cordoba and Buenos Aires, the south of Bahía Blanca and the territories of Río Negro and Nenquén, if they are not accompanied in each case by a special certificate given by the technical officer of the Ministry of Agriculture appointed for this purpose. This certificate will be accorded after inspection of plants on leaving the nurseries, desinfection when necessary, also inspection of packing, labelling, seals, cordage of packages of plants or plants in bulk, according to the regulations in force. (*Ibid*, pág. 733).

Chile. — By Decree No. 366 of 16 March, 1934, it is permitted, from 1 June, under certain conditions, to send oranges, lemons and mangos to the south of the country which come from Pica, Matilla, and El Valle, districts in the province of Tarapacá which are free from fruit fly [*Ceratitis capitata*].

The entry of all fruits in the fresh state into Pica, Matilla and El Valle is prohibited, but entry is allowed to horticultural and similar products provided that no earth remains on the roots. This control will be exercised by the Inspector of the Plant Protection Service at Pica.

This Service is authorised to temporarily suspend, until a definite decision is adopted by the Government, the functioning of this Decree in cases where the presence of fruit fly has been established in Pica, Matilla and El Valle, or any other disease the spreading of which is considered dangerous by the above mentioned Service. (*Diario Oficial de la República de Chile*, Santiago, 30 de mayo de 1934, año LVII, núm. 16,884, págs. 1464 y 1465).

Spain. — The ' Orden ' of 23 June, 1934 lays down rules to prevent the spreading of the plague of locusts. (*Gaceta de Madrid*, Madrid, 27 junio 1934, año CCLXXIII, tomo II, núm. 178, pág. 1889).

*** By ' Orden ' of 23 October, 1934 it is forbidden, on account of fruit fly [*Ceratitis capitata*] to export grapes to the United States of America unless accompanied by a phytopathological certificate issued by an agronomy engineer officially authorised by the National Phytopathological Service.

The phytopathological control for the shipments of grapes will be rigorously applied and will be extended, with the same severity, to all packages which if broken, damaged or not hermetically sealed will not be accepted. (*Gaceta de Madrid*, Madrid, 26 octubre 1934, año CCLXXIII, tomo IV, núm. 299, pág. 730).

United States of America (1). — By revision of Notice of Quarantine No. 19 on account of citrus canker [*Bacterium citri*] and other citrus diseases, approved on 17 August, 1934 and effective on and after 1 September, 1934, the importation from all foreign localities and countries of citrus nursery stock, including buds and scions, except for experimental or scientific purposes by the Department of Agriculture, is prohibited.

The term ' citrus ' as used herein shall be understood to include only plants belonging to the tribe *Citrinae*, subfamily *Citratae*, of the family *Rutaceae*, which tribe comprises the following genera: *Citropsis*, *Citrus*, *Eremocitrus*, *Fortunella*, *Microcitrus*, *Monanthocitrus*, *Pleurocitrus*, and *Poncirus*.

French Guiana. — By the Decision No. 508 of the Governor of French Guiana, dated 30 June, 1934, the control of ' fourmis-manioc ' is organised in the communes of Cayenne and Rémire-Montjoly. (*Journal Officiel de la Guyane française et du Territoire de l'Inini*, Cayenne, 30 juin 1934, CXVI année, nº 26, p. 371).

French Indo-China. — Two Decrees of the Governor General, dated 9 February and 20 May, 1933, also an Addendum of 20 May, 1933, determine the costs payable for the inspection of plants, parts of plants, etc., intended for importation into French Indo-China. (*Deutschen Handels-Archiv*, Berlin, 15. September 1934, 88. Jahrg., 2. Septemberheft, S. 3364).

(1) From documents communicated to the Institute by Mr. Lee A. Strong, Chief of the Bureau of Entomology and Plant Quarantine, United States Department of Agriculture, Washington, D. C.

French Indo-China (Tonking). — The Circular No. 1004 of the 'Résident supérieur' of Tonking, dated 15 May, 1934, relative to the control of lodging of rice recommends the use of a very simple method which consists of tying three or four stools of rice together in a bundle, below the ears, with one or two stalks of sterile rice. This should be done if possible a fortnight after flowering, and, if carefully done, the bundles are resistant to the action of wind and lodging is avoided. (*Bulletin Administratif du Tonkin*, Hanoï, 1er juin 1934, année 1934, nº 11, p. 1828-1829).

Italy. — By Ministerial Decree of 14 September, 1934, according to article 17 of the Law No. 987 of 18 June, 1931 containing enactements dealing with the protection of cultivated plants and agricultural products against diseases and pests and with the services relating thereto [see this *Bulletin*, 1931, No. 9, pp. 166], a 'Consorzio' has been formed for the improvement and increase of citrus growing in the province of Reggio Calabria and which is obliged to carry out the enactments contained in the above Law.

The annual contribution payable by each member of the 'Consorzio' cannot be more than 0,10 lira per tree in bearing. (*Bollettino Ufficiale del Ministero dell'Agricoltura e delle Foreste*, Roma, 21 ottobre 1934, anno VI, n. 24, pp. 4735-4736).

*** The Ministerial Circular No. 501 of 22 September, 1934 invites the directors of the Royal Phytopathological Observatories, the directors of the Travelling Chairs of Agriculture and the special delegates for Phytopathology to inform nursery-men and producers on the regulations in force for the circulation of plants, parts of plants and seeds within the Kingdom so that these regulations may be strictly applied and without delay. (*Ibid.*, pp. 4741-4742).

*** The Royal Decree-Law No. 1692 of 4 October, 1934 authorises the Ministry of Agriculture and Forests to contribute to the expenses caused by the campaign against the scale insects of citrus trees.

For this purpose, by Decree of the Ministry of Finance, a credit of 3 million liras will be entered on the statement of estimated expenditure by the Ministry of Agriculture and Forests for the financial year 1934-1935. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 27 ottobre 1934, anno 75º, n. 253, p. 4898).

Rumania. — The Ministerial Decision No. 1037 of 20 April, 1934 regulates the delivery of authorisations for the use of sieves removing the dodder seed. (*Monitorul Oficial*, Bucureşti, 26 Aprilie 1934, Nr. 96, p. 2542).

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(1) For summer fruits from 1 May to 15 July and for winter fruits from 15 September to 15 December, destruction of the fruit fly by the use of traps or spraying according to formulas recommended by the Direction of Agriculture, Commerce and Colonisation.

(2) From 1 May to 15 December, daily collection and destruction of fruits infested with larvae.

The transport and sale of fruits infested with larvae is forbidden from 1 May to 31 December.

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NOTES

Fourth International Locust Conference. — This Conference will be held at Cairo in the spring of 1936.

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